



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

CK

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/605,751

10/23/2003

Charles N. Archie

FIS920030158

2750

32074

7590

10/02/2006

INTERNATIONAL BUSINESS MACHINES CORPORATION

DEPT. 18G

BLDG. 300-482

2070 ROUTE 52

HOPEWELL JUNCTION, NY 12533

EXAMINER

STOCK JR, GORDON J

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/605,751

Applicant(s)

ARCHIE ET AL.

Examiner

Gordon J. Stock

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 13-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7 and 11 is/are rejected.
- 7) ☒ Claim(s) 4-6, 8-10 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 20031023;20031103.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of **claims 1-12** in the reply filed on July 26, 2006 is acknowledged.

2. **Claims 13-18** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on July 26, 2006.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on October 23, 2003 and November 3, 2003 are being considered by the examiner.

Drawings and Specification

4. **Figures 3-5** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **66** and **68** of Fig. 8. In addition, in Fig. 2b, '**212**' should read **-222-**. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add

Art Unit: 2877

the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The specification is objected to for the following: on line 10 of paragraph 0109 '76' should read -77-. Correction is required.

7. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

8. **Claims 8-10** are objected to for the following: 2% is not defined adequately. Examiner suggests using '2% of nominal measurement' to clarify the relations being satisfied. In addition, 'the grating' in **claims 8-10** lacks antecedent basis. Corrections required.

9. **Claim 12** is objected to for the following: 'the grating' lacks antecedent basis. Correction is required.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2877

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. **Claims 1 and 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's disclosure of prior art.

As for **claims 1 and 3**, applicant's disclosure of prior art discloses the following: a plurality of parallel elongated features, each having a length in a lengthwise direction; and a plurality of stress-relief structures, two gaps, disposed at a plurality of positions, at least two positions, along said length of each said elongated feature; wherein, said gaps interrupt said elongated features (Fig. 5: 21 and 22). Applicant's disclosure of prior art is silent concerning the pattern target as a scatterometry target. He does disclose the pattern targets are formed in lithography processes (paragraph 0033) and that scatterometry is used to measure features patterned (paragraph 0001); wherein, scatterometry can better measure dimensions of patterns (paragraph 0014). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the pattern target a scatterometry target in order to better measure its

Art Unit: 2877

dimensions to provide more accurate determination of manufacturing process fidelity such as printing and etching fidelity.

13. **Claims 1, 2, 7, 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sakamoto (7,009,768)** in view of **Wen et al. (2005/0083520)**.

As for **claims 1, 2, 7**, Sakamoto discloses the following: a plurality of elongated features, each having a length in a lengthwise direction (**claim 1**)(Fig. 1: 6a-6d); a plurality of stress-relief features disposed at a plurality of positions along said length of each said elongated feature (**claim 1**)(Fig. 1: 7a-7f); wherein said elongated features include linearly extending features (**claim 2**)(Fig. 1: 6a-6d); wherein said stress-relief structures include connecting features which connect pairs of said elongated linearly extending features in a direction transverse to said lengthwise direction (**claim 2**)(Fig. 1: 7a-7f); wherein said stress-relief features include jogs in said parallel elongated features (**claim 7**)(Fig. 1: intersection of 7a-7f and 6a-6d creates vertical jogs along 6a-6d). As for being scatterometry target, Sakamoto does not explicitly state it. Sakamoto does disclose the object is formed lithographically (Fig. 2d; col. 8, lines 40-67; col. 9, lines 1-25) and that critical dimensions were investigated (col. 8, lines 23-35). Wu in a standardized sample for characterizing the performance of a scatterometer teaches measuring multilayer samples (paragraph 0004 and 0010). Therefore, it would be obvious to one of ordinary skill in the art to have the beam splitter be a scatterometry target in order to be able to measure its critical dimensions accurately.

As for **claim 11**, Sakamoto discloses the following: a plurality of elongated features, each having a length in a lengthwise direction (Fig. 1: 6a-6d); a plurality of stress-relief features disposed at a plurality of positions along said length of each said elongated feature (Fig. 1: 7a-

Art Unit: 2877

7f); wherein said stress-relief features include jogs in said parallel elongated features (Fig. 1: intersection of 7a-7f and 6a-6d creates vertical jogs along 6a-6d). As for being scatterometry target, Sakamoto does not explicitly state it. Sakamoto does disclose the object is formed lithographically (Fig. 2d; col. 8, lines 40-67; col. 9, lines 1-25) and that critical dimensions were investigated (col. 8, lines 23-35). Wu in a standardized sample for characterizing the performance of a scatterometer teaches measuring multilayer samples (paragraph 0004 and 0010). Therefore, it would be obvious to one of ordinary skill in the art to have the beam splitter be a scatterometry target in order to be able to measure its critical dimensions accurately. As for said jogs causing said scatterometry target to produce a return signal which is sensitive to photolithographic defocus, he does not explicitly state this; however, he discloses that the target is formed through exposure (col. 8, lines 65-68). Examiner takes Official Notice that it is well-known in the art that pattern production is dependent on photolithographic focus and dosage. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made that the return signal of the target would be sensitive to photolithographic defocus, for the patterns that produced the target are dependent upon photolithographic focus.

Allowable Subject Matter

14. **Claims 4-6, 8-10, and 12** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten to overcome any objections stated above.

As to **claim 4**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a scatterometry target 'producing a return signal mimicking a return signal

Art Unit: 2877

from a scatterometry target not having said stress-relief features,' in combination with the rest of the limitations of **claims 4-6**.

As to **claim 8-10, and 12** the prior art of record, taken alone or in combination, fails to disclose or render obvious in a scatterometry target the particular relation being satisfied in combination with the rest of the limitations of **claims 8-10 and 12**.

Conclusion

15. Several facts have been relied upon from the personal knowledge of the examiner about which the examiner took Official Notice. Applicant must seasonably challenge well known statements and statements based on personal knowledge when they are made by the Board of Patent Appeals and Interferences. In re Selmi, 156 F.2d 96, 70 USPQ 197 (CCPA 1946); In re Fischer, 125 F.2d 725, 52 USPQ 473 (CCPA 1942). See also In re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971) (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice). If applicant does not seasonably traverse the well-known statement during examination, then the object of the well known statement is taken to be admitted prior art. In re Chevenard, 139 F.2d 71, 60 USPQ 239 (CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged with rebutting the well-known statement in the next reply after the Office action in which the well known statement was made.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

Art Unit: 2877

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (571) 273-8300

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

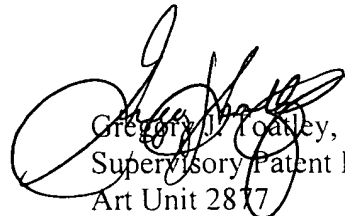
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gs

September 28, 2006



Gregory J. Toatley, Jr.
Supervisory Patent Examiner
Art Unit 2877